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1

SEQUENCE LISTING

<110> Biogemma

<120> MEG1 endosperm-specific promoters and genes

<130> BGM 27 - WO

<150> EP 03292739.4

<151> 2003-11-03

<160> 64

<170> PatentIn version 3.2

<210> 1

<211> 370

<212> DNA

<213> Zea mays

<220>

<221> misc_feature

<223> promoter Meg1-1

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gatagatata gcaaattcac caaataatat agaggtatag atatatagatat aacaaggggt 120
atatatatag atatatagatat atagaagata tagatggata gatagatatg atagaataga 180
atagataact tacaattttg tctaaaagag actaaatcac tgctaagttt ggtctttggt 240
gaatacttgc cagtgaattg gttttcgcta tagtatatat ataagtatac actcttctag 300
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ttcttgcgac 370

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<213> Zea mays

<220>

<221> misc_feature

<223> promoter Meg1-2

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taggggtata gatatatagata taagaagggg tatagatata gatatatagata tatagaagat 180
atagatatagat agatatagatat gatagaatag ataacttaca attttgtcta aaagaaacta 240
aatcactgct aagtttggag tagcatatct ttggtgaata cttgctagtg aattggtttc 300

cgctatagta tatatatata agtatacact cttctaggat tatagtatat atatatatat 360
 aagtatacac tcttctagga tcaatcgtga ggagttcatt aaattgtctt gcgac 415

<210> 3
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 <223> promoter Meg1-3

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 agatatagat atatagaaga tatagataga tagatagata tgatagaata gataacttac 180
 aattttgtct aaaagaaact aaatcactgc taagtttgga gtagcatatc ttggtgaat 240
 acttgctagt gaattgggtt ccgctatagt atatatatat aagtatacac tcttctagga 300
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 aaaattgtct tgcgac 376

<210> 4
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 <213> Zea mays

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 <223> nucleotides 1 to 121 of promoter Meg1-1

<400> 4
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 <223> MEG1-1 cDNA

<400> 5

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ggaattttgc gagaaaaaag agcacaatgc gctcaagggt ttcttccatg caaagataac    180
aagtgctact gttgcattgg gggccgaact catgattgct actatacgat ggctcagtgt    240
agtcatgcat gcttctaatac aaaaattaag atcactgttt ttatatacaa tgtaatggta    300
ggcaatgcta ttaataatac ataagggaat tttagttttg gtattagaat ttttctgatt    360
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<210> 6
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 <213> Zea mays

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 <223> MEG1-1

<400> 6

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Met Glu Tyr Lys Lys Arg Val Asp Ala Leu Val Phe Phe Ser Leu Leu
1           5           10           15

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Leu Leu Gly Tyr Phe Ala Ala His Ala His Gly Ala Glu Glu Gly Ile
20           25           30

```

```

Leu Arg Glu Lys Arg Ala Gln Cys Ala Gln Gly Phe Leu Pro Cys Lys
35           40           45

```

```

Asp Asn Lys Cys Tyr Cys Cys Ile Gly Gly Arg Thr His Asp Cys Tyr
50           55           60

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Tyr Thr Met Ala Gln Cys Ser His Ala Cys Phe
65           70           75

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<210> 7
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 <213> Zea mays

<220>
 <221> misc feature
 <223> Meg1-2 cDNA

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gggtgttttcta ctccagctaa agaaggaatt atgcaaggaa acggagcacg atgcgttgta      180
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cgctactcta cgatggctga gtgtagacat gcctgcttct aaacacaaat taagatcgct      300
gttattatat acattgtaat ggtaggtaat gctattaata atatatggga attttagttt      360
tggtaaaaaa aaaaaaaaaa aaa                                             383

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 <213> Zea mays

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 <221> MISC_FEATURE
 <223> MEG1-2

<400> 8

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Met Glu Tyr Arg Lys Arg Val Asp Ala Leu Val Phe Phe Ser Leu Leu
1           5           10           15

```

```

Leu Leu Gly Tyr Phe Ala Ala His Ala His Gly Lys Gly His Val Thr
          20           25           30

```

```

Asp Asp Val Gly Val Ser Thr Pro Ala Lys Glu Gly Ile Met Gln Gly
          35           40           45

```

```

Asn Gly Ala Arg Cys Val Val Gly Phe Pro Pro Cys Lys Asp Asn Lys
          50           55           60

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```

Cys Tyr Cys Cys Ile Gly Gly Arg Thr His Ala Arg Tyr Ser Thr Met
65           70           75           80

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Ala Glu Cys Arg His Ala Cys Phe
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<210> 9
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 <223> MEG1-3 cDNA

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gctactgctg cattgggggg cgaactcatg ctgctactc tacgctggct gaggtagtc 240
atgcctgctt ctaaacaaaa attaagatca ctgttattat atacattgta atggtaggta 300
atgctattaa taatatatgg gaattttagt tttggtatta tacttttttc caattcacga 360
aataccttct aaaacctggc gtgacagggtg gcatagcagg agtggagggc agcgacggct 420
gcacagcgct gcatgcagtg gcttgcattt gtagctcctc gttggcgatg cgtgtgcgac 480
caagagctct cggcacagac aggtcatgtc acagatgatg tcggagtttc tactccagct 540
aaagaaggaa ttatgcaagg aaacggagca cgatgcgatg tagggtttcc tccatgcaaa 600
gataacaagt gctactgctg cattgggggg cgaactcatg ctgctactc tacgctggct 660
gaggtagtc atgcctgctt ctaaacaaaa attaagatca ctggtattat atacattgta 720
atgggtaggt aatgctatta ataatatatg ggaatttaag ttttggattt aaaaaaaaaa 780
aaaaaa 786

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<210> 10
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 <213> Zea mays

<220>
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 <223> MEG1-3, first ORF

<400> 10

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1          5          10          15

```

```

Leu Leu Arg Tyr Phe Ala Ala His Ala His Gly Lys Gly Lys Cys Tyr
20          25          30

```

```

Cys Cys Ile Gly Gly Asp Val Gly Phe Pro Pro Cys Lys Asp Asn Lys
35          40          45

```

```

Cys Tyr Cys Cys Ile Gly Gly Arg Thr His Ala Arg Tyr Ser Thr Leu
50          55          60

```

```

Ala Glu Cys Ser His Ala Cys Phe
65          70

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<210> 11
 <211> 667

<212> DNA
<213> Zea mays

<220>
<221> misc_feature
<223> MEG1-4 cDNA

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accaccaagg ccccgccgc caccagcacc gtagccacta ccgcccga gaccaccacc 180
gcctttgccg aatccaccac ccatgccatg cccaattcca ccacctttgc catggcctcc 240
acccatgcc a tggccaatgt cgcctccgag tccgccacct ttgccatatc caccaccaag 300
gccaccgcct tttcttaa at tgtcttgcca catggagtac agaaagaggg tggatgcgct 360
agtgtttttc tcgttacttc tctcggata ctttgctgct catgcacatg gaaaggctaa 420
agaaggaatt atgcaaggaa acggagcacg atgcgttggtg gggtttcctc catgcaaaga 480
taacaagtgc tactgttgca ttggggggcg aactcatgct cgctactcta cgatggctga 540
gtgtagtc at gcctgcttct aaacaaaaat taagatcgat gttattatat aaattgtaat 600
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aaaaaaaa 667

<210> 12
<211> 76
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<213> Zea mays

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<223> MEG1-4

<400> 12

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Leu Leu Gly Tyr Phe Ala Ala His Ala His Gly Lys Ala Lys Glu Gly
20 25 30

Ile Met Gln Gly Asn Gly Ala Arg Cys Val Val Gly Phe Pro Pro Cys
35 40 45

Lys Asp Asn Lys Cys Tyr Cys Cys Ile Gly Gly Arg Thr His Ala Arg
50 55 60

Tyr Ser Thr Met Ala Glu Cys Ser His Ala Cys Phe
 65 70 75

<210> 13
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 <212> DNA
 <213> Zea mays

<220>
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 <223> MEG1-5 cDNA

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 cactctatat attgagggct tacctgcaaa ctgcacacga cgggaggttt cacatatatt 180
 tcgcccattt gttggttttc gtgaagttcg tcttgtcaac aaggagtcca gacatcctgg 240
 tggagatcca catgtgttgt gtttcgtcga ttttgacaac cctgctcagg ctacaattgc 300
 tctggaagca ttacaaggtc atgtcacgga tgatgtcaat gtttctgctc cagctgaaga 360
 aggaattttg cgagaaaaaa gagcacaatg cgctcaaggg tttcttccat gcaaagataa 420
 caagtgtctac tgttgcatg ggggccgaac tcatgattgc tactatacga tggctcagt 480
 tagtcatgca tgcttctaata caaaaattaa gatcactgtt tttatataca atgtaatggt 540
 aggcaatgct attaataata cataagggaa ttttattttg gtattagaat ttttctgatt 600
 gacgaaaaaa aaaaaaaaaa a 621

<210> 14
 <211> 142
 <212> PRT
 <213> Zea mays

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 <223> MEG1-5

<400> 14

Met Gly Tyr Gly Gly Arg Pro Glu Pro Pro Leu Pro Pro Asp Ala Ser
 1 5 10 15

Ser Thr Leu Tyr Ile Glu Gly Leu Pro Ala Asn Cys Thr Arg Arg Glu
 20 25 30

Val Ser His Ile Phe Arg Pro Phe Val Gly Phe Arg Glu Val Arg Leu
 35 40 45

Val Asn Lys Glu Ser Arg His Pro Gly Gly Asp Pro His Val Leu Cys
 50 55 60

Phe Val Asp Phe Asp Asn Pro Ala Gln Ala Thr Ile Ala Leu Glu Ala
 65 70 75 80

Leu Gln Gly His Val Thr Asp Asp Val Asn Val Ser Ala Pro Ala Glu
 85 90 95

Glu Gly Ile Leu Arg Glu Lys Arg Ala Gln Cys Ala Gln Gly Phe Leu
 100 105 110

Pro Cys Lys Asp Asn Lys Cys Tyr Cys Cys Ile Gly Gly Arg Thr His
 115 120 125

Asp Cys Tyr Tyr Thr Met Ala Gln Cys Ser His Ala Cys Phe
 130 135 140

<210> 15
 <211> 974
 <212> DNA
 <213> Zea mays

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 gcagcggaag aagaaggcca cccgcgcgcg cggccgcttc ctccaagcgg gagagggaga 180
 gggagcggga gcgggagcgg aacaaggagg cggacgaggt caccgtggag ctccgcgcgg 240
 tggggttcgg caaggaggtg gtgctgaagc agcggcggcg gatgcgggcg aggcgccgcc 300
 tgggcgagga ggagcgcgcg gccatcctgc tcatggcgct ctccctccggc gtcgtgtacg 360
 cctgacttgg ctagcaaccg cgccggcccc cgagacgccg cgcccaaagg cggcgaaagg 420
 agaggagggc cagattcgct ggacgtgcgg catgatctga gcccagaca gatccgtccg 480
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 gtagctgtcc tgctgtaacc ttctcttgca atgtaaggag agattatatg gtaaaaaaca 720

cagatgatgt cagtgtttct actccagcta aagaaggaat tatgcaagga aacggagcat 780
 ggtgcgttgt agggtttcct ccatgcaaag ataacaagtg ctactgctgc attggggggc 840
 gaactcatgc tcgctactct acgatggctg agtgtagaca tgcttgcttc taaacaaaaa 900
 ttaagatcgc tgttattata tacattgtaa tggtaggtaa tgctattaat aatatatggg 960
 aatttttagtt ttgg 974

<210> 16
 <211> 61
 <212> PRT
 <213> Zea mays

<220>
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 <223> MEG1-6

<400> 16

Met Val Lys Asn Thr Asp Asp Val Ser Val Ser Thr Pro Ala Lys Glu
 1 5 10 15

Gly Ile Met Gln Gly Asn Gly Ala Trp Cys Val Val Gly Phe Pro Pro
 20 25 30

Cys Lys Asp Asn Lys Cys Tyr Cys Cys Ile Gly Gly Arg Thr His Ala
 35 40 45

Arg Tyr Ser Thr Met Ala Glu Cys Arg His Ala Cys Phe
 50 55 60

<210> 17
 <211> 23
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<220>
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<400> 17
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23

<210> 18
 <211> 25
 <212> DNA
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<220>
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<400> 18
 ttgtatataa aaacagtgat gttaa

25

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<210> 19
<211> 16
<212> PRT
<213> Artificial

<220>
<223> Synthetic peptide

<400> 19

Asn Ala Pro Ala Glu Glu Gly Ile Leu Arg Glu Lys Arg Ala Gln Cys
1 5 10 15

<210> 20
<211> 27
<212> PRT
<213> Artificial

<220>
<223> Cystein-rich peptide

<220>
<221> MISC_FEATURE
<222> (1)..(27)
<223> Xaa = amino acid

<400> 20

Cys Xaa Xaa Xaa Xaa Cys Tyr Cys Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Tyr Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Cys
20 25

<210> 21
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<220>
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<400> 21
ggatccatga atcccaactt caacagtg

28

<210> 22
<211> 31
<212> DNA
<213> Artificial

<220>
<223> oligonucleotide

<400> 22

gaattcttat cggttatata tctggctctc c

31

<210> 23
<211> 23
<212> DNA
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<220>
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tgctgctcat gcgcatgggg ctg

23

<210> 24
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<212> DNA
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<220>
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28

<210> 25
<211> 23
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<400> 25
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23

<210> 26
<211> 28
<212> DNA
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<220>
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<400> 26
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28

<210> 27
<211> 20
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<220>
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<400> 27
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20

<210> 28
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<220>
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<400> 28
gaagcaggca tgactacact c

21

<210> 29
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<220>
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<400> 29
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20

<210> 30
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<212> DNA
<213> Artificial

<220>
<223> oligonucleotide

<400> 30
ttagaagcak gcatgwctac actsagcc

28

<210> 31
<211> 22
<212> DNA
<213> Artificial

<220>
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<400> 31
atggctggct atggtgttga tg

22

<210> 32
<211> 21
<212> DNA
<213> Artificial

<220>
<223> oligonucleotide

<400> 32
gtgcagtgtg caggtaagcc c

21

<210> 33
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<220>
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<400> 33
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25

<210> 34
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<212> DNA
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<220>
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ttagaagcak gcatgwctac actsagcc

28

<210> 35
<211> 22
<212> DNA
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<220>
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22

<210> 36
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<212> DNA
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<220>
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<400> 36
acgctgcatt caattaccgg gaag

24

<210> 37
<211> 24
<212> DNA
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<220>
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<400> 37
acacctcaaa tagatatgga tata

24

<210> 38
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<220>
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<400> 38
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29

<210> 39
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<220>
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<400> 39
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30

<210> 40
<211> 29
<212> DNA
<213> Artificial

<220>
<223> oligonucleotide

<400> 40
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29

<210> 41
<211> 29
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<210> 42
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<220>
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29

<210> 43

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<220>
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<400> 43
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28

<210> 44
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<212> DNA
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<220>
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<400> 44
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29

<210> 45
<211> 24
<212> DNA
<213> Artificial

<220>
<223> oligonucleotide

<400> 45
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24

<210> 46
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38

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<400> 47
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24

<210> 48
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<212> DNA
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<220>
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<400> 48
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38

<210> 49
<211> 24
<212> DNA
<213> Artificial

<220>
<223> oligonucleotide

<400> 49
acacctcaaa tagatatgga tata

24

<210> 50
<211> 38
<212> DNA
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<220>
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<400> 50
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38

<210> 51
<211> 1041
<212> DNA
<213> Zea mays

<220>
<221> misc_feature
<223> MRP1

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acacctacac aaacaacaac cagcatgttg tggcaagtcg tagtgccatt gtgaaccaca 180
ataacttttg gatgccaacg gaggtcgttc caccctgtgga caacatggac atgatgcaag 240
gctatctaata ggctgatacg gatgccatga ggcttgttca gggacaacaa catatgccaa 300
atgttgttcc taatcaaagg aggcattgcag tgaagtgttg gactacagat gagcacagga 360
atttccttcg tggctagaa gtgtttggcc gtggtaaatg gaagaacatc tccaagtact 420
tcgtcccccac aaggacacca gtgcagatct ctagccatgc acagaagtat ttccgcaggc 480


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aggagtgcac cacagagaaa caacgcttta gcatcaacga tgttggcctc tacgacacac 540
agccatgggt gcggcagaac aactcctcta gcagctggga ggcgctcacc ttactgctg 600
gccgtgcgta caataatata aactactgtg cctttaacag cctcccgtat gccagcagcc 660
aggcaagtaa caaccaggta gctacatgga ttacagacca gcaggcaact gcaagttctt 720
ctatagctcc tccagcgacg gaggagagcc agatatataa ccgataatat atataatggt 780
catcagcagc tgggagaggc tttcttcata tataatcaat aggtagatag atatggacaa 840
cgtccattga ctagtttaat ttctatctat atgttttgta tccaatgatg catgtaaaac 900
ctagttgggt gttaaaggta attagtagca tactatatat gggctagaaa cagtttcatt 960
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gtctaaaaaa aaaaaaaaaa a 1041

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<210> 52
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 <212> PRT
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<220>
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 <223> MRP1

<400> 52

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Met Asn Pro Asn Phe Asn Ser Val Trp Ser Ala Pro Glu Ile Asn Met
1           5           10           15

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```

Met Asn Ser Leu Ile Thr Ser His Ile Ala Asn Asn Thr Tyr Thr Asn
20           25           30

```

```

Asn Asn Gln His Val Val Ala Ser Arg Ser Ala Ile Val Asn His Asn
35           40           45

```

```

Asn Phe Gly Met Pro Thr Glu Val Val Pro Pro Val Asp Asn Met Asp
50           55           60

```

```

Met Met Gln Gly Tyr Leu Met Ala Asp Thr Asp Ala Met Arg Leu Val
65           70           75           80

```

```

Gln Gly Gln Gln His Met Pro Asn Val Val Pro Asn Gln Arg Arg His
85           90           95

```

```

Ala Val Lys Phe Trp Thr Thr Asp Glu His Arg Asn Phe Leu Arg Gly
100          105          110

```

Leu Glu Val Phe Gly Arg Gly Lys Trp Lys Asn Ile Ser Lys Tyr Phe
 115 120 125

Val Pro Thr Arg Thr Pro Val Gln Ile Ser Ser His Ala Gln Lys Tyr
 130 135 140

Phe Arg Arg Gln Glu Cys Thr Thr Glu Lys Gln Arg Phe Ser Ile Asn
 145 150 155 160

Asp Val Gly Leu Tyr Asp Thr Gln Pro Trp Val Arg Gln Asn Asn Ser
 165 170 175

Ser Ser Ser Trp Glu Ala Leu Thr Phe Thr Ala Gly Arg Ala Tyr Asn
 180 185 190

Asn Thr Asn Tyr Cys Ala Phe Asn Ser Leu Pro Tyr Ala Ser Ser Gln
 195 200 205

Ala Ser Asn Asn Gln Val Ala Thr Trp Ile Thr Asp Gln Gln Ala Thr
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Ala Ser Ser Ser Ile Ala Pro Pro Ala Thr Glu Glu Ser Gln Ile Tyr
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Asn Arg

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 <212> PRT
 <213> Zea mays

<220>
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 <223> MEG1-3, second ORF

<400> 53

Met Gln Trp Leu Ala Phe Val Ala Pro Arg Trp Arg Cys Val Cys Asp
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Gln Glu Leu Ser Ala Gln Thr Gly His Val Thr Asp Asp Val Gly Val
 20 25 30

Ser Thr Pro Ala Lys Glu Gly Ile Met Gln Gly Asn Gly Ala Arg Cys
 35 40 45

Asp Val Gly Phe Pro Pro Cys Lys Asp Asn Lys Cys Tyr Cys Cys Ile

50

55

60

Gly Gly Arg Thr His Ala Arg Tyr Ser Thr Leu Ala Glu Cys Ser His
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Ala Cys Phe

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 <213> Artificial

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23

<210> 56
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 <212> DNA
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<220>
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<400> 56
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20

<210> 57
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<220>
 <223> MEG promoters conserved sequence

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37

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ggtagtagta gagccagaat tgtaaccttg ggttttccca cacctcaa atagatagat 480
atagggatat agatagatat agcaaattca ccaaataata taggggtata gatatagata 540
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gatagaatag ataacttaca attttgtcta aaagaaacta aatcactgct aagtttggag 660
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cgctagtgtt tttctcggtta cttctcctcg gatactttgc tgctcatgca catgggaagg 900
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aaagataaca agtgctactg ctgcattggg gggcgaaactc atgctcgcta ctctcgatgg 1260
ctgatgtaga catgcctgct tctaacaaaa taagacgttg tatatatcat gtatggagga 1320
atttataata ttatggaatt agttgtatat 1350

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<220>

<223> oligonucleotide

<220>

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<223> nucleotides 1-127 of promoter MEG1-1

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atatata 127

<210> 60

<211> 25

<212> DNA

<213> Artificial

<220>

<223> oligonucleotide

<400> 60

acacctcaaa tagatatgga tatag 25

<210> 61

<211> 25

<212> DNA

<213> Artificial

<220>

<223> oligonucleotide

<400> 61

gtcgcagaa atgttaagga actcc 25

<210> 62

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<213> Zea mays

<400> 62

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agaattgtaa ccttgggttt tcccacacct caaatagata tagatatagg gatatagata 180

gatatagcaa attcaccaaa taatatagg gtagatat agatataaga aggggtatag 240

atatagatat agatatatag aagatataga tagatagata gatatgatag aatagataac 300

ttacaatttt gtctaaaaga aactaaatca ctgctaagtt tggagtagca tatctttggt 360

gaatacttgc tagtgaattg gtttccgcta tagtatatat atataagtat acactcttct 420

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<210> 63
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<212> DNA
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<220>
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<400> 63
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<210> 64
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<220>
<223> oligonucleotide

<400> 64
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